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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,230	07/12/2004	Chun Bao Zhu	1138.P005US/HCH/jcc	3556
38556	7590	07/10/2006	EXAMINER WONG, LUT	
LAWRENCE Y.D. HO & ASSOCIATES PTE LTD 30 BIDEFORD ROAD, #07-01, THONGSIA BUILDING SINGAPORE, 229922 SINGAPORE			ART UNIT 2633	

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

### Application No.

10/501,230

### Applicant(s)

ZHU, CHUN BAO

### Examiner

Lut Wong

### Art Unit

2633

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1-7, 13-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 1,3 and 6 recite the limitation of “adapted to”. It is not clear what applicant intend to claim. It is also not clear how an engine can “adapt” to perform a function such as genetic algorithm, dynamically shift, and swapping. See MPEP 2111.04[R-3].

Claims 13-17 requires “means” plus functions. Since applicant’s disclosure does not provide any structure of computer program code, the metes and bounds of the claims cannot be determined.

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**Claims 1-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter and lacks patentable utility.**

In claim 1, a "system" is being recited; however, it appears that the system would reasonably be interpreted by one of ordinary skill in the art as software, per se. The only element positively recited as part of the system is the "storage medium". Applicant's specification provides no explicit and deliberate definition of the "storage medium", and it appears that such would reasonably be interpreted as a software storage medium such as data file or database. As such, it believed that the system of claim 1 is reasonably interpreted as functional descriptive material, per se.

The claimed invention lacks credible utility. Genetic Algorithm (GA) is a search heuristic that does not guarantee a global optimum or provide a solution. Hence, GA does not guarantee to derive a roster especially from initially randomized population. Even if a roster was derived, the usefulness of the roster is not being claimed. The claimed invention, view as a whole, merely derive a roster. Deriving a roster is just a process of compiling data and has no practical utility.

With respect to claim 13, the "computer usable medium," given broadest reasonable interpretation may be an electromagnetic signal. This subject matter is not limited to that which falls within a statutory category and hence not patentable. Amending claim 13 to recite --computer storage medium-- would overcome this rejection in a manner consistent with Applicant's specification.

Any claim not specifically addressed, above, is being rejected as incorporating the deficiencies of a claim upon which it depends.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Boyd et al ("Genetic algorithm for scheduling of laboratory personnel". Clin Chem. 2001;47:118-123)**

**Claims 1-4** are drawn to a rostering system based upon genetic algorithms comprising: a rostering engine, coupled to at least one storage medium to perform genetic algorithm on one or more shift lists to thereby derive a roster, said genetic algorithm being based upon shifting factor and swapping factor associated with each of said shift lists.

Boyd et al anticipates a scheduling system, run in a PC, based upon genetic algorithms (GA) to derive a schedule from a plurality of shift lists (also call chromosomes). The GA was base upon mutation and crossover operation factors associated with each chromosome. According to the applicant's disclosure, shifting is non-functionally distinct from mutation. A shifting operation can be achieved by performing mutation with nearby gene predetermined times. Note that mutation was done by swapping the genes. See fig.1-2 and Material and Methods section.

In regarding **claim 3**, note that mutation operation was performed at least one time until a terminate criteria was reached. See fig.3.

**Claim 5 and 6** are the same as crossover between chromosomes within same gene group. Each gene group is basically a column in fig 2. Hence swapping individual shifts of same gene group is no difference than n-point crossover conventional in the art.

**Claim 7** is drawn to a module for constructing initial shift lists. Boyd et al clearly anticipate a software module call GeneHunter for enumerating chromosome. That is, to initial shift list. See page 2 col. 3.

For **claims 8-12**, Boyd et al also anticipate a method of deriving a schedule for individuals comprising the steps of: initializing an initial shift list matrix; performing genetic algorithm based on mutation and crossover; calculating fitness for each candidate; selecting the fittest. See fig.3 and the teachings above.

In regarding to **claims 13-17**, note that the system was installed in a PC, which must have a computer usable medium (e.g. hard drive) with computer program code recorded on it.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Julio Tanomaru ("Staff Scheduling by a Genetic Algorithm with Heuristic Operators". Proceedings of the IEEE. Reference on Evolutionary Computation 1995; 456-461) teaches staff scheduling by a genetic algorithm.

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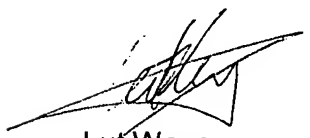
Aickelin et al ("Exploiting problem structure in a genetic algorithm approach to a nurse rostering problem." Journal of Scheduling 3, 139-153) teaches nurse rostering using hybrid genetic algorithm.

Burke et al ("A Memetic Approach to the Nurse Rostering Problem", Applied Intelligence, v.15 n.3, p.199-214, November-December 2001) teaches a memetic approach to the nurse rostering problem.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lut Wong whose telephone number is (571) 270-1123. The examiner can normally be reached on M-F 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shanon Foley can be reached on (571) 272-0898. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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